UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,977	02/16/2001	Zhimei Jiang	3493.00125	2838

28317 7590 09/07/2004

BANNER & WITCOFF LTD.,
ATTORNEYS FOR AT & T CORP
1001 G STREET , N.W.
ELEVENTH STREET
WASHINGTON, DC 20001-4597

EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/783,977	JIANG ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,11,13-14,15,18-22 and 24-25* is/are rejected.

7)☒ Claim(s) *7-10,12,16,17,23 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/6/2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Claim Objections

1. Claims 3-5 are objected to because of the following informalities: the limitation "measured signal quality" recited in line 1 of claims 3, 4, and 5, respectively, should read as "measured channel quality" in lines 1-2 of claim 2 in order to be consistent with the terminology used in claim 2. Appropriate correction is required.

Claim 7 is objected to because of the following informalities: the symbol "i" is not defined in the weighting equation of the claim. Appropriate correction is required.

Claim 15 is objected to because of the following informalities: there is a spelling error in the term "wherin" in line 1 of the claim, which should be replaced with "wherein." Appropriate correction is required.

Claim 18 is objected to because of the following informalities: the limitation "said station" recited in line 2 of the claim should be replaced with "said base station or said mobile station" in order to be consistent with the terminology used in claim 1.

Claims 20-26 are objected to because of the following informalities: the term "Base station apparatus" should be replaced "A base station apparatus" instead.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-6, 11, 14-15, 18-22, 25** are rejected under 35 U.S.C. 102(e) as being anticipated by Pankaj (USP 6,393,012).

Regarding claims 1 & 20, Pankaj discloses a base station apparatus (**base station and base station controller**, see elements 10, 4, Fig. 2A) to perform the method of scheduling packets for delivery to one of mobile stations and a corresponding base station (**a method for enhancing the efficiency of transmitting data to a plurality of subscribers by scheduling resources to each individual subscribers based upon the rate at which the subscriber can receive transmitted data**, see lines 27-43, col. 2) in a wireless packet network (**CDMA network**, see lines 47-54, co. 6 and Fig. 2A) comprising the iterative steps of

calculating channel efficiency (**individual subscribers are selected to seize the finite resource based upon a weight which is dependent on an instantaneous rate at which the individual subscriber is capable of consuming the finite resource**, see lines 31-37, col. 4) for a mobile station (**subscriber**) and

scheduling packets for delivery to said mobile station or said base station by determining a value of relative weight of said mobile station by a weighting equation (**channel scheduler associates each of the data queues of each mobile station with a weight for selecting the**

particular mobile station to receive data from a base station, see lines 26-39, col. 7 and **weighting equation**, lines 17-32, col. 12), responsive to the calculated channel efficiency.

Regarding claim 2, Pankaj discloses a method as recited in claim 1 further comprising the initial step of measuring channel quality for said mobile station (**determining a desirability metric value for each customer and selecting a most desired customer having the greatest desirability metric value**, see lines 33-39, col. 3).

Regarding claim 3, Pankaj discloses a method as recited in claim 2 wherein said measured signal quality is determined by calculating effective serving rate (**the rate of data transmission from the data queue associated with each mobile station**, see lines 64-65, vol. 5).

Regarding claim 4, Pankaj discloses a method as recited in claim 2 wherein said measured signal quality is determined by calculating channel usage (**desirability metric value is dependent on weight which is based upon the instantaneous rate at which the individual subscriber is capable of consuming the finite resource**, see lines 29-36, col. 3 and lines 29-37, col. 4).

Regarding claim 5, Pankaj discloses a method as recited in claim 2 wherein said measured signal quality is determined based on measurements of one of power of desired signal, channel noise and channel interference (**the data rate of transmitted from the data queue is**

dependent on signal strength and the noise environment at the remote station, see lines 64-67, col. 5).

Regarding claims 6 & 22, Pankaj discloses a base station apparatus to perform a method as recited in claim 1 wherein said channel efficiency is determined by the equation:

efficiency = Actual Amount of data delivered / Maximum Amount of Data that can be delivered with the same channel resource (see lines 25-37, col. 4).

Regarding claim 11, Pankaj discloses a method as recited in claim 1 wherein users with higher channel efficiency receive a higher weight than users with a lower channel efficiency (see lines 62-64, col. 2).

Regarding claim 14, Pankaj discloses a method as recited in claim 1 wherein said packet scheduling step comprises the step of determining a choice of system modulation scheme among a high and low packet delivery rate (**channel element modulates a data signal based on the desirability metric value and hence the rate of transmission to a mobile station, provided by the channel scheduler**, see lines 26-39, col. 3 and lines 31-37, col. 4).

Regarding claim 15, Pankaj discloses a method as recited in claim 1 wherein said method is responsive to the step of receiving a request for a download of data from said mobile station (see lines 21-30, col. 5 and lines 60-63, col. 6).

Regarding claim 18, Pankaj discloses a method as recited in claim 1 wherein packets are delivered via time frames, each time frame comprising a plurality of time slots, said time slots being allocated to said station for packet delivery in accordance with a selection of a packet delivery scheme (see lines 31-36, col. 5 and Table 1).

Regarding claim 19, Pankaj discloses the method of claim 1 applied to both downlink, said base station to said mobile station, and uplink, said mobile station to said base station, operations (see lines 43-46, col. 6).

Regarding claim 21, Pankaj discloses a base station apparatus according to claim 20 wherein said mobile station is provided with a packet queue (see lines 28-30, col. 5) and associated with said packet queue is a timer for timing packet delivery (see lines 33-45, col. 8).

Regarding claim 22, Pankaj discloses a base station apparatus according to claim 20 wherein channel efficiency is determined by the equation:

efficiency = Actual Amount of data delivered / Maximum Amount of Data That can be delivered with the same channel resource.

Regarding claim 25, Pankaj discloses a base station apparatus according to claim 20 wherein said base station is adapted to receive packets for delivery to mobile stations from a plurality of servers via the Internet (see lines 21-26, col. 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 13 & 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pankaj.

Regarding claims 13 & 24, Pankaj discloses all the aspects of the claimed invention set forth in the rejection of claims 1 and 20, respectively, except fails to disclose a base station apparatus to perform method as recited in claim 1, wherein said wireless packet network comprises an EDGE system.

However, Pankaj discloses a wireless communication system (see Fig. 2A) in which the all the aspects of the claimed invention are preformed. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wireless communication network of Pankaj such that the wireless communication comprises an Enhanced Data Rates for a GRPS system. The motivation to do so is to support applications that require multimedia packet transfer in a third generation GPRS system because a higher data rate air interface is required to ensure multimedia packets are delivered with minimum delay.

Allowable Subject Matter

4. Claims 7-10, 12, 16-17, 23, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 7, a method as recited in claim 1 wherein said weighting equation is given by:

$W_i = efficiency_i^{exponent}$

In claim 12, a method as recited in claim 1 wherein users with higher channel efficiency receive a lower weight than users with a lower channel efficiency.

In claim 16, a method as recited in claim 9 wherein a weight for said base station is determined according selecting a value of said exponent along a horizontal axis of values from a minimum of minus two to a maximum positive value.

In claim 23, a base station apparatus according to claim 20 wherein said weight is determined by the equation:

$W_i = efficiency_i^{exponent}$

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure with respect to channel efficiency based packet scheduling for interactive data in cellular networks.

US Patent 5,896,561 to Schrader et al.

US Patent 6,501,745 to Turina et al.

US Patent 6,584,089 to Honkasalo et al.

US Patent 6,519,233 to Gutierrez

US Publication 2002/0094815 to Kanerva

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

KDM
Art Unit 2664